CLAIMS

What is claimed is:

1. A communications apparatus comprising:

a plurality of base transceiver stations, each having a control channel associated therewith; and

a non-terrestrial repeater having a first antenna to receive information from the plurality of base transceiver stations, and a second antenna to project a beam on the earth;

wherein the beam includes the control channel from each of the plurality of base transceiver stations.

2. The communications apparatus of claim 1 wherein each of the control channels has an access channel associated therewith, and wherein each control channel is assigned a list of access classes to influence a relative loading between access channels.

3. The communications apparatus of claim 2 wherein each list of access classes is assigned in a different priority order.

4. The communications apparatus of claim 3 wherein each of the plurality of base transceiver stations is configured to remove an access class from the associated list of access classes in reverse priority order to reduce loading on the associated access channel.

5. The communications apparatus of claim 2 wherein each list of access classes is a unique subset of a total set of access classes.

6. The communications apparatus of claim 5 wherein each of the plurality of base transceiver stations is configured to remove an access class from the associated list of access classes in random order to reduce loading on the associated access channel.

7. The communications apparatus of claim 1 wherein each of the plurality of base transceiver stations has a receive time window and a time offset associated therewith, a time location of the receive time window being a function of the time offset, such that the receive time window defines an area within the beam from which an associated base transceiver station receives communications.

8. The communications apparatus of claim 7 wherein:

each control channel has an access channel associated therewith; and

each of the plurality of base transceiver stations is configured to be responsive to each access channel, and to receive communications occurring within the associated receive time window in each access channel.

9. The communications apparatus of claim 7 further comprising a controller coupled to each of the plurality of base transceiver stations, the controller being configured to alter time offsets to influence the relative load of each of the plurality of base transceiver stations.

10. The communications apparatus of claim 9 wherein the controller is configured to assign lists of access classes to each of the control channels to influence the relative load of each access channel.

11. In a communications system having a plurality of control channels projected in a single beam, a method of influencing relative loading on a plurality of access channels in the single beam comprising:

performing access class assignments to each of the plurality of control channels; and

modifying the access class assignments to influence loading on the plurality of access channels.

12. The method of claim 11 wherein performing access class assignments includes:

assigning to each of the plurality of control channels a different subset of a total set of access classes.

13. The method of claim 12 wherein modifying the access class assignments includes:

transferring an assignment of one access class from one of the plurality of control channels to another of the plurality of control channels.

14. The method of claim 11 wherein performing access class assignments includes:

assigning a complete set of access classes to each control channel, wherein the complete set of access classes is assigned to each of the plurality of control channels in a different priority order.

15. The method of claim 14 wherein modifying the access class assignments includes:

removing an access class previously assigned to one of the plurality of control channels, wherein the removing is performed in a reverse priority order.

16. In a communications system having a plurality of base transceiver stations, and a plurality of access channels in a single beam, a method of influencing relative loading on the plurality of base transceiver stations comprising assigning a different time offset to each of the plurality of base transceiver stations, wherein the different time offset for each of the plurality of base transceiver stations defines a time location of a receive time window within which the corresponding base transceiver station monitors the plurality of access channels.

17. The method of claim 16 wherein assigning a different time offset comprises:

assigning a different time offset to each of the plurality of base transceiver stations such that at least two time locations of receive time windows overlap in time, producing at least one area of overlap in the beam.

18. The method of claim 17 further comprising:

when a channel request is received in one of the plurality of access channels by a first base transceiver station having a first load and by a second base transceiver station having a load larger than the first load, assigning the channel request to the first base transceiver station.

19. The method of claim 17 wherein a first base transceiver station having a first load has a receive time window overlapping with a receive time window of a second base transceiver station having a second load, the method further comprising:

when the second load exceeds the first load, reassigning calls from the second base transceiver station to the first base transceiver station.

20. The method of claim 19 further comprising changing a time offset assigned to one of the first base transceiver station and the second base transceiver station to increase a size of the at least one area of overlap in the beam.

21. The method of claim 16 further comprising broadcasting one control channel in the single beam, such that a one-to-many relationship exists between the one control channel and the plurality of access channels.